

ENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RBT/P301190W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 01/ 02971	International filing date (day/month/year) 05/07/2001	(Earliest) Priority Date (day/month/year) 11/07/2000
Applicant SUPREME PLASTICS HOLDINGS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- ☒ as suggested by the applicant. 1
- ☐ because the applicant failed to suggest a figure. ☐ None of the figures.
- ☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 01/02971

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A44B19/16 B65D33/25

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A44B B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 173 184 A (S. AUSNIT) 16 March 1965 (1965-03-16) column 2, line 32 -column 3, line 25; figures 1-6	1-3
X	US 6 047 450 A (ILLINOIS TOOL WORKS INC.) 11 April 2000 (2000-04-11) column 6, line 1 - line 17; claim 1; figures 8,10	1,2
X,P	EP 1 033 317 A (ILLINOIS TOOL WORKS INC.) 6 September 2000 (2000-09-06) column 4, paragraph 19 -column 5, paragraph 26 column 7, paragraph 39; claims 1-3; figures 1,5	1

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
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- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- *&* document member of the same patent family

Date of the actual completion of the international search

12 February 2002

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19/02/2002

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No.

PC/GB 01/02971

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 628 566 A (REYNOLDS CONSUMER PRODUCTS) 13 May 1997 (1997-05-13) column 3, line 45 -column 4, line 42; claims 1,16,17,20; figures 1-5B	4-6
A	US 4 817 188 A (MINIGRIP INC.) 28 March 1989 (1989-03-28) claim 1; figures 1-3	7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 01/02971

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3173184	A	16-03-1965	GB 1036454 A	20-07-1966
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			FR 2628067 A1	08-09-1989
			GB 2216494 A , B	11-10-1989

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ance Notes on Codes and Abbreviations" appearing at the begin-
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(54) Title: RECLOSABLE FASTENERS FOR PLASTICS BAGS AND OTHER CONTAINERS

(57) Abstract: A zipper (10) for application to a film or web using cross-web techniques comprises two interengageable elements (12, 14), each having engageable hooks (20, 22), and each having an upstanding post (24) at the margin of the fastener which is engageable with a heel (28) at the opposing margin of the other element, with the respective posts (24) and heels (28) being complementarily angled (26) at their respective contact surfaces. This enables the closure more easily to resist pressure without distortion.

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RECLOSABLE FASTENERS FOR PLASTICS BAGS AND OTHER CONTAINERSField of the invention

This invention relates to reclosable fasteners, otherwise known as zippers, for plastics bags and other containers, and is particularly concerned with zippers intended to be applied to a film or web using cross-web techniques.

Background to the invention

When a zipper strip is applied to a film or web, heat and pressure are applied to effect the welding of the zipper to the film or web. The heat and/or the pressure can result in damage to the closure. Various measures have been adopted to try to minimise the effects of the heat and pressure. However, it can still happen that the zipper is damaged or distorted as a result of these external influences.

15 Summary of the invention

It is an object of the present invention to provide an improved design of zipper which is resistant to distortion or damage due to the welding heat and/or pressure.

In accordance with the present invention there is provided a reclosable fastener for plastics bags and other containers, comprising two elements, each element comprising at least one portion releasably engageable with a portion of the other element, and each element comprising an upstanding post at the margin of the fastener which is engageable with a heel of the other element at the opposing margin of said other element, wherein the respective posts and heels of the two elements are complementarily angled at their respective contact surfaces.

The fact that the respective contact surfaces of the posts and heels are angled or mitred enables the closure more easily to resist pressure without distortion and without the

hooks being squashed. The margins of the closure are more easily able to resist bending and to maintain their desired supporting function.

The releasably engageable portions are preferably hooked 5 portions.

Preferably, each of the elements of the closure is provided with two hooks, engageable with the hooks of the other element.

In a preferred embodiment of the invention, and with a 10 view particularly to resisting distortion or damage due to heat, each of the elements is provided at or adjacent to its margins, on the face remote from the hook or hooks, with a pair of protruding ribs which provide additional bulk at these marginal zones. The ribs are preferably overlaid each with 15 a layer of high performance sealing/welding material, such as EVA for example.

In a preferred embodiment of the invention, a single long flange is provided on one only of the two interengageable elements of the closure, this flange being arranged to face 20 the inside of the bag and being used for initial attachment to the film or web.

Brief description of the drawings

In order that the invention may be more fully understood, one presently preferred embodiment of zipper in accordance 25 with the invention will now be described by way of example and with reference to the accompanying drawing which is a schematic cross-sectional view through the zipper.

Description of the preferred embodiment

Referring to the drawing, there is shown a zipper, 30 indicated generally at 10, comprising a first element 12 and a second element 14. The two elements 12 and 14 are generally

the same as each other, apart from the fact that element 12 is provided with a single elongate flange 16. Each element 12, 14 comprises a body portion 18 with two upstanding legs 20 which terminate in hooks 22. The respective hooks 22 of the two elements 12 and 14 are interengageable to make the reclosable fastener.

Each element 12, 14 also comprises an upstanding support post 24 at one margin. The support post 24 is slightly longer than the hooked legs 20, 22 so that it extends slightly beyond the tops of the legs. The upper end surface 26 of each post 24 is tapered to provide an angled contact surface. Facing each support post 24, on the opposing element, there is provided a heel portion 28, again at the margin. The surface of each heel portion 28 facing the respective post 24 is shaped, i.e. angled, to be complementary to the angled contact surface 26. As can be seen from the drawing, with this arrangement, the respective posts and heels nest with one another to provide a shape-locking configuration which tends to resist squashing or outward bending under vertical loads. The angled contact surfaces are able to absorb the welding pressure and maintain their linear integrity, thus preventing the hooked legs 20, 22 from being squashed or distorted.

In order to reduce the effects of the welding heat, each of the closure elements 12 and 14 is provided with a pair of ribs 30 on the outside face remote from the legs 20. The respective ribs 30 are provided again at the margins of the closure, in alignment with the posts 24 and heel portions 28. The ribs 30 are provided by a thickening of the material of which each of the two elements is composed. Because of the additional bulk provided by the ribs 30, they also contribute to the resistance of the closure to deformation due to

pressure. On each rib 30 there is provided a layer 32 of a material which is a high-performance sealing/welding material or blend of materials, such as EVA for example. This facilitates the welding of the zipper to the encompassing web or film (not shown). The layers 32 are co-extruded with the closure elements 12 and 14.

The single long flange 16 which is part of element 12 is arranged to face the inside of the bag or container. This flange is used for initial attachment to the film or web as the zipper is applied to the web by a cross-web technique. The provision of a single long flange provides increased internal strength to the bag by altering the angle at which the load in the bag acts against the zipper closure.

CLAIMS:

1. A reclosable fastener for plastics bags and other containers, comprising two elements, each element comprising at least one portion releasably engageable with a portion of the other element, and each element comprising an upstanding post at the margin of the fastener which is engageable with a heel of the other element at the opposing margin of said other element, wherein the respective posts and heels of the two elements are complementarily angled at their respective contact surfaces.

2. A reclosable fastener as claimed in claim 1, in which the releasably engageable portions are hooked portions.

3. A reclosable fastener as claimed in claim 1 or 2, in which each of the elements is provided with two hooks, engageable with the hooks of the other element.

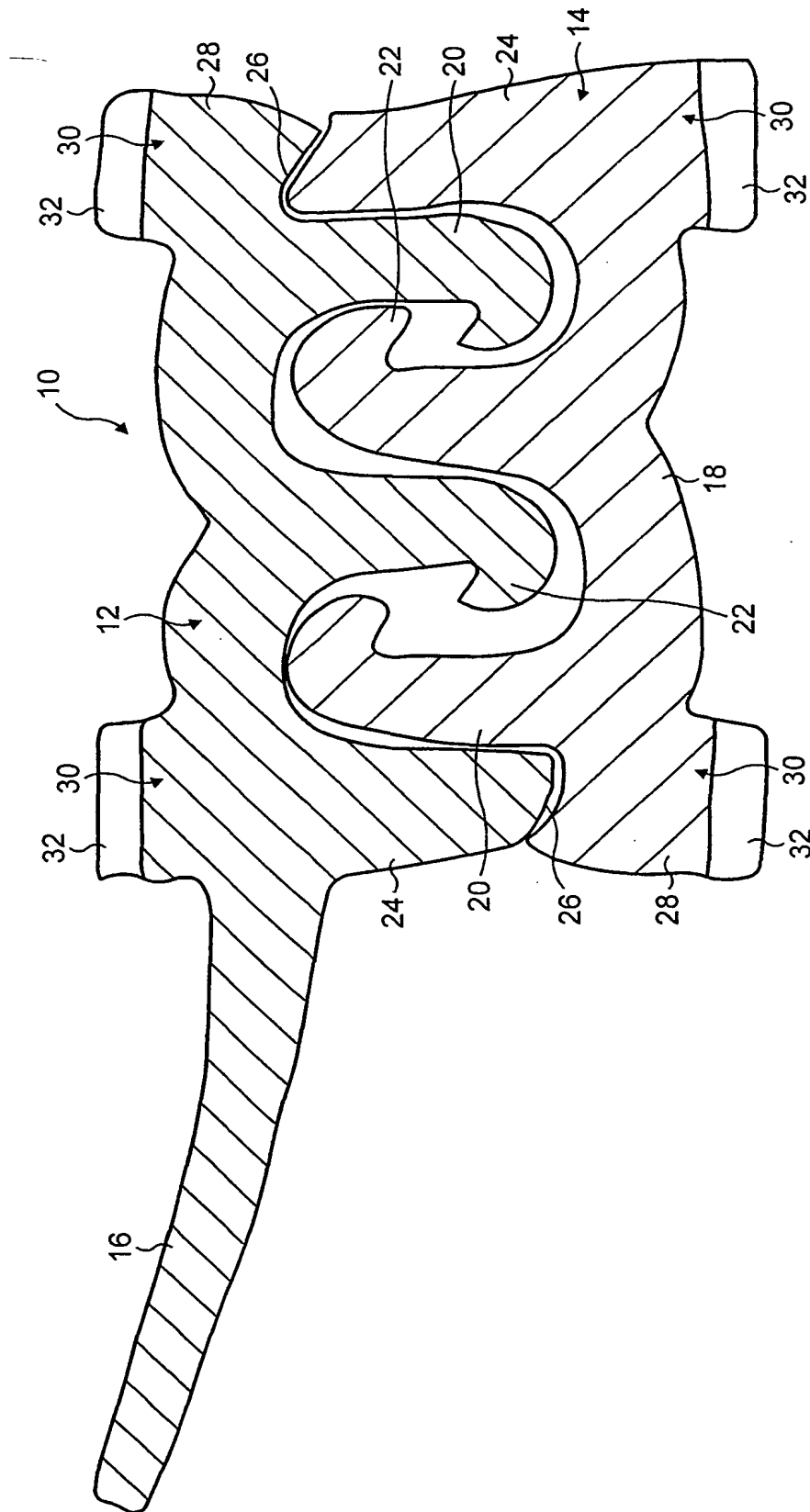
4. A reclosable fastener as claimed in claim 1, 2 or 3, in which each of the elements is provided at or adjacent to its margins, on the face remote from the hook or hooks, with a pair of protruding ribs.

5. A reclosable fastener as claimed in claim 4, in which each of the ribs is overlaid with a layer of sealing/welding material.

6. A reclosable fastener as claimed in claim 5, in which the sealing/welding material is EVA.

7. A reclosable fastener as claimed in any preceding claim, in which a single flange is provided on one only of the two interengageable elements of the fastener, for attachment to a film or web.

1 / 1



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(71) Applicant (for all designated States except US):
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AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
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patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

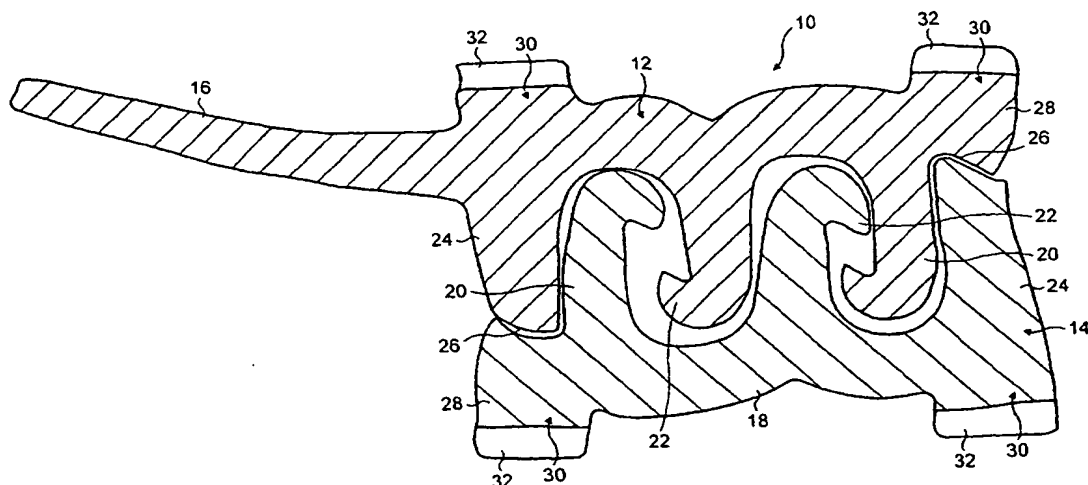
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ning of each regular issue of the PCT Gazette.

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(57) Abstract: A zipper (10) for application to a film or web using cross-web techniques comprises two interengageable elements (12, 14), each having engageable hooks (20, 22), and each having an upstanding post (24) at the margin of the fastener which is engageable with a heel (28) at the opposing margin of the other element, with the respective posts (24) and heels (28) being complementarily angled (26) at their respective contact surfaces. This enables the closure more easily to resist pressure without distortion.

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EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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